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AIRPORT SECURITY TECHNOLOGY AND RESEARCH ACT OF 1989

SEPTEMBER 19, 1989.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

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Mr. ROE, from the Committee on Science, Space, and Technology, submitted the following

REPORT

[To accompany H.R. 2365]

[Including cost estimate of the Congressional Budget Office]

The Committee on Science, Space, and Technology, to whom was referred the bill (H.R. 2365) to improve airport security by providing additional funding for research on, and evaluation of, explosives detection equipment, having considered the same, report favorably thereon with an amendment and recommend that the bill as amended do pass.

CONTENTS

	Page
I. Summary of committee actions	2
II. Purpose of the bill	2
III. Background and need for legislation	2
IV. Summary of the hearing	3
V. Explanation of the bill and committee views	5
VI. Sectional analysis of the bill	6
VII. Inflation impact	7
VIII. Committee oversight findings and recommendations	7
IX. Summary of Government Operations Committee findings and recommendations	7
X. Budget analysis and projection	8
XI. Congressional Budget Office cost estimate	8
XII. Changes in existing law	8
XIII. Recital of record vote on reporting—committee recommendation	9

The amendment is as follows:

On page 2, lines 3 and 4, strike "put passengers at risk because they are unreliable" and insert in lieu thereof "are insufficiently reliable".

29-006

H703-8

I. Summary of Committee Actions

In response to the terrorist bombing of Pan Am Flight 103, the Subcommittee on Transportation, Aviation, and Materials held a public hearing on the state of airport security. The hearing was held on February 9, 1989.

As a result of the hearing, Mr. McCurdy introduced H.R. 1534 to direct the Federal Aviation Administration (FAA) to (1) initiate rulemaking action regarding the implementation and use of explosives detection equipment at certain U.S. airports, and (2) accelerate the research and development of advanced explosives detection technologies.

Subsequently, on April 3, 1989 Mr. Oberstar introduced H.R. 1659 which (1) mandated the installation of explosive detection equipment within 60 days of enactment, and (2) defined the mechanism for funding up to 100 percent of the costs of implementation.

Since H.R. 1659 contained none of the R&D provisions in H.R. 1534, Mr. McCurdy on May 16, 1989 introduced H.R. 2365 which focused on the acceleration of the research, development, and evaluation of advanced explosives detection equipment with additional and enhanced capabilities. H.R. 2365 was referred solely to the Committee On Science, Space, and Technology and was subsequently referred to the Subcommittee on Transportation, Aviation, and Materials.

Since the genesis of H.R. 1534 was a public hearing, no public hearing was needed for the matters contained in H.R. 2365. The Subcommittee conducted a mark-up session for H.R. 2365 on May 31, 1989. The bill was discussed and no amendments were offered. A rollcall vote was conducted on June 3, 1989 and the motion to report the bill to the full Committee was approved unanimously.

On July 26, 1989, the Committee on Science, Space, and Technology, a quorum being present, ordered reported, by voice vote, the Airport Security Technology and Research Act of 1989 with an amendment.

II. Purpose of the Bill

The bill amends the Airport and Airway Improvement Act of 1982, as amended, to (1) support cost-effectiveness and operational feasibility evaluations of alternative explosives detection systems for possible implementation at airports, and (2) promote accelerated research and development of future explosives detection technologies for use in airports.

III. Background and Need for Legislation

In the 1960s, the principal threat to civil air carriers was armed passengers who, for one reason or another, used those weapons to seize control of the crew and hijack the aircraft to some unplanned or unauthorized destination such as Cuba. The U.S. response to that threat was heightened security in airport terminals and the implementation of X-ray and metal detection equipment to screen passengers and carry-on luggage for metallic weapons. Since then the world, and the corresponding threat to civil air carriers, has changed significantly.

In today's world the motivation behind attacks against American flag civil aircraft is rarely so simple as to divert it to a different destination. Instead, the motivation is more often to use the aircraft and its passengers and crew as either a bargaining chip in complicated and passionate political "negotiations" or to destroy the aircraft as a symbolic attack on the Government of the United States. At the same time, the weapons involved are no longer just knives and guns, but include plastic explosives with sophisticated, pressure sensitive, timed, or remotely engaged detonation systems. The sophistication of terrorist tactics can only be expected to increase with time.

The FAA response, along with establishing a closer relationship with the intelligence community, has been to conduct a serious and aggressive research and development program to develop sensors that will detect the more sophisticated explosives employed by the world's terrorist groups. The most promising technology at this time is the Thermal Neutron Analysis (TNA) equipment that is designed to screen checked baggage for plastic explosives. Six prototype units are being implemented at appropriate airports for field evaluations. Alternatives for funding the procurement of additional units to satisfy security requirements at other high-risk airports are being examined.

The legislation is needed to ensure that the FAA, as the focal point for airport security matters, does not so concentrate on enhancing TNA detection techniques that the development of other screening technologies aimed at checked baggage, as well as technologies aimed at screening passengers, carry-on baggage, and cargo are inadvertently given a lower priority. There is also a need to get out in front of the terrorist threat by exploring new technologies for detecting liquid and non-nitrogen based explosives and non-metallic hand guns in anticipation of those weapons becoming more common in the future.

IV. Summary of the Hearing

The hearing touched on a wide range of issues, including such topics as the use of military personnel to augment civil aviation security measures, the Government's policies for alerting aircraft operators and passengers to security threats, and the Airport and Airway Trust Fund as a potential funding mechanism for aviation security research. However, the core discussions relevant to the jurisdiction of the Subcommittee and the intent of H.R. 2365 centered around: (1) the scope and nature of the terrorist threat, and (2) the research required to deal with that threat.

NATURE OF THE THREAT

Chairman Valentine's opening statement identified one of the most disturbing aspects of international terrorism when he stated that the bombing of Pan Am Flight 103 demonstrates that "* * * international terrorists are becoming increasingly sophisticated in terms of their tactics and capabilities. Time magazine described the tragedy as being 'diabolically well planned'". The Ranking Minority Member, Mr. Lewis, also raised a disturbing point when he noted that the 1985 crashes of an Aero Air DC-8 at Gander, New-

foundland which killed 246 United States soldiers, and the crash of an Air India Boeing 747 off the coast of Ireland which killed all 329 passengers had similarities with the Pan Am bombing. The difficulty of stopping the reoccurrence of aircraft sabotage cannot be overstated.

The statement of the Administrator of the Federal Aviation Administration (FAA), T. Allen McArtor, was clearly sensitive to the sense of urgency and priority the Congress and the public feel in the wake of the Pan Am bombing regarding finding solutions to the problem of international terrorism. He stated that the "* * * recent tragedy of Pan Am Flight 103 is a graphic and troubling reminder that despite the worldwide efforts to improve aviation security, civil aviation remains vulnerable to criminal and terrorist acts. It further highlights the pressing need to ensure that we are doing all that is technologically and humanly possible to reduce the threat to the traveling public, * * *."

Ambassador-at-Large for Counter-terrorism for the Department of State, L. Paul Bremer III, went on to describe the evolution of the terrorist threat. He stated that the threat has shifted "* * * away from aircraft hijackings, which 20 years ago or so we saw 15 or 20 terrorist hijackings in a year * * * to the point where, in 1986, we had only two; in 1987, only one; and in 1988, only one international terrorist hijacking, which means we've made considerable progress in making it more difficult for terrorists to get weapons into the top side of the cabin. As a result of that, we're seeing a possible shift toward sabotage; in the use of bombs going into the cargo hold of the aircraft". He then made a key statement when he stated that "We must be prepared to try to move ahead of the terrorists with our technology and with our techniques so that we can counter the threat as they move into new areas".

Mr. Rohrabacher of the Subcommittee captured the nature of the terrorist threat when he said, "Earlier it was described as a war and I agree * * * with that assessment totally * * *. We're up against an organized group of terrorists, people who hate the United States. They hate you and me and they hate everything this country stands for * * *."

REQUIRED RESEARCH

When asked about the Department of State's long-range research and development plans, Ambassador Bremer stated that they had "* * * invoked a panel of scientists who identified more than 70 projects that they thought should be funded which are not now funded elsewhere in the Government." He also noted that "At present, we have some 28 projects which are (funded through) this Research and Development Committee * * *."

Administrator McArtor provided some additional examples of research that could enhance aviation and airport security. He said, "I think there might be some * * * higher levels of technology that I would like to see pursued with respect to plastic weapons detection, imaging recognition systems where we can supplement the human operator * * * with artificial intelligence and image recognition systems. All of these are * * * states-of-the-art that I think could be explored and would be effective for overall global security.

Mr. Timothy L. Anderson, representing the Airport Operators Council International (AOCI), stated the AOCI "* * * applauds * * * Administrator McArtor's decision last December to accelerate delivery of thermal neutron analysis devices * * *. We also urge the Subcommittee to provide for greater emphasis on the development of vapor-detection technology for use in inspection of checked and hand-carried baggage and cargo * * *."

Mr. Richard F. Lally, representing the Air Transport Association, summarized the intent of H.R. 2365 when he stated that "* * * the government must speed the involvement and development of commercial application of * * * new technologies that are emerging * * *. We think that effort should be accelerated and we think that the efforts to produce this equipment should include government help in nurturing these screening technologies."

V. Explanation of the Bill and Committee Views

The blatant arrogance of the bombing of Pan Am Flight 103 on December 21, 1988 was the latest in a series of traumatic terrorist related experiences for the citizens of this country. This criminal and inhumane act demonstrated the fact that everyone is vulnerable to terrorist acts of violence; including the horror of being in a damaged aircraft as it plummets to the earth from seven miles up. Clearly something must be done as quickly as possible to protect innocent civilians from politically motivated, unpredictable, irrational, and cowardly acts of terrorism. H.R. 2365, is an expression of the Committee's strong support for the research and development of technologies aimed at reducing the probability of successful terrorist actions through the effective detection of explosive devises and/or substances.

H.R. 2365 focuses exclusively on the Federal Aviation Administration's (FAA) capability to perform adequate aviation security research. The FAA has given considerable attention to the Thermal Neutron Analysis (TNA) technology as an airport security system. The Committee is concerned that there will be a tendency on the part of the FAA and the public to believe that TNA is "the answer" and the problem of terrorist violence against civilian aircraft is on the verge of being solved. TNA is a positive step, but it is only the beginning.

The current technology is not perfect. It is large, weighs 10 tons per unit, costs almost $1 million per copy, cannot detect small amounts of explosives, and can process only about 10 bags per minute. According to the Airport Operators Council International (AOCI), most existing terminals and ramps do not meet the space "footprint" requirements, the excessive weight will require substantial structural renovations to airport terminal buildings, the issue of the responsibility for the procurement and installation of the systems will remain extremely controversial, and the throughput rate is inadequate for operational usage. Clearly more research needs to be done to enhance the operational utility of the TNA technology.

The concern of the Committee is that the attention of the FAA, the aviation industry, and the public will be highly focused on enhancing the TNA technology. While the Committee supports efforts

in that area, it must not be forgotten that TNA is only one of several technologies currently being touted by the explosives detection industry as being effective in screening checked baggage. Those alternative technologies must be objectively analyzed by the FAA and, if warranted, evaluated for technical feasibility and operational acceptability.

In addition, the bill is also intended to demonstrate the Committee's desire that research into technologies for detecting explosive devices and/or substances being brought aboard an aircraft via a passenger's body/clothing, carry-on baggage, or cargo shipments not be lost amid the activities aimed at enhancing the TNA technology. The current X-ray and metal detection equipment is inadequate for coping with the state-of-the-art terrorist capabilities and will become an increasingly attractive point of penetration as the defense against checked baggage becomes stronger. Few alternatives to X-ray and metal detection equipment are mature enough at this point to be considered near-term replacement technologies. This is an area of research that must be addressed with vigor and certainly not be overlooked due to an overly optimistic (albeit popular) enthusiasm for a slightly more mature technology (i.e. TNA) that addresses a ,le (and different) aspect of aviation security.

The current terrorist "explosive of choice" is normally a nitrogen based plastic explosive. Most explosives detection research is aimed at detecting nitrogen based explosives. While the Committee agrees that this a perfectly natural and rational approach, it would seem that this is also an opportune time to get ahead of the terrorist groups, instead of only reacting to them, by also directing research into the detection of explosives that are likely to become the "explosive of choice" as the capability to detect nitrogen based explosives increases. Aviation security experts postulate that liquid and/or non-nitrogen based explosives may well become increasingly common.

The Committee's intent in reporting H.R. 2365 is to ensure that the FAA and the aviation security community continue to perform adequate research and system evaluation on potentially beneficial technologies that address the complete terrorist threat. These include:

(1) TNA technology enhancements,

(2) Alternative technologies for screening checked baggage,

(3) Technologies for screening passengers, carry-on baggage, and cargo, and

(4) Technologies for detecting liquid and non-nitrogen based explosives.

In order to provide for the funding for the research directed in H.R. 2365, the bill increases the total FAA Fiscal Year 1990 R&D budget authorization by $8 million, to $254,530,000, including an appropriation of $16 million solely for research on, and evaluation of, aviation and airport security projects and activities.

VI. Sectional Analysis of the Bill

Section 1 establishes the short title: Airport Security Technology and Research Act of 1989.

The first element of Section 2 describes the findings of the Committee based upon the February 9, 1989 public hearing. The initial finding, reinforced by Department of State and FAA witnesses, is that terrorist activities against civilian aviation are growing increasingly sophisticated. It also concludes that conventional X-ray and metal detection equipments are insufficiently reliable in detecting concealed plastic explosives. In addition, the existing state-of-the-art explosives detection technology is expensive and designed primarly for screening checked baggage, leaving a need for research into technologies for (1) screening passengers, carry-on baggage, and cargo; and (2) detecting liquid and non-nitrogen based explosives. The findings also state that there are multiple claims and proposals for alternative explosives detection systems and that those claims and proposals need to be evaluated for effectiveness and operational feasibility.

The second element of Section 2 defines the purpose of the Bill as (1) supporting cost effectiveness and operational feasibility evaluations of alternative explosives detection systems for possible implementation at airports, and (2) promoting accelerated research and development of future explosives detection technologies for use in airports.

Section 3 is the specific amendment to the Airport and Airway Improvement Act of 1982 that authorizes the appropriation of $16 million solely for research on, and evaluation of, aviation and airport security projects and activities. The section also increases the total FAA R&D budget authorization for fiscal year 1990 by $8 million, to a total of $254,530,000. The budget authorization breakdown for fiscal year 1990 following the amendment becomes:

(i) $25,000,000 for Human Factors research,
(ii) $16,000,000 for aviation/airport security research, and
(iii) $213,530,000 for all other research.

VII. Inflation Impact

In accordance with rule XI, clause 2(l)(4), of the Rules of the House of Representatives, this legislation is assessed to have a minimal inflationary effect on prices and costs in the operation of the national economy.

VIII. Committee Oversight Findings and Recommendations

Pursuant to rule XI, clause 2(l)(3) of the Rules of the House of Representatives, and under the authority of Rule X, Clause 2(b)(1) and Clause 3(f) the following statement on oversight activities is made:

The Committee's oversight findings are incorporated in the recommendations contained in the present bill and report.

IX. Summary of Government Operations Committee Findings and Recommendations

No findings and recommendations on oversight activity pursuant to rule X, clause 2(b)(2) and rule XI, clause 2(l)(3), of the Rules of the House of Representatives, have been submitted by the Committee on Government Operations for inclusion in this report.

X. Budget Analysis

The bill provides for new authorization rather than new budget authority and consequently the provisions of section 308(a) of the Congressional Budget Act are not applicable.

XI. Congressional Budget Office Cost Estimate

1. Bill number: H.R. 2365.
2. Bill title: Airport Security Technology and Research Act of 1989.
3. Bill status: As ordered reported by the House Committee on Science, Space, and Technology, July 26, 1989.
4. Bill purpose: H.R. 2365 would increase by $8 million the 1990 authorization for the research, engineering and development program funded by the Airport and Airway Trust Fund, and would specify that a total of $16 million of the 1990 authorization is authorized for research on, and evaluation of, aviation and airport security projects and activities.
5. Estimated cost to the Federal Government:

[By fiscal year, in millions of dollars]

	1990	1991	1992	1993	1994
Authorization level	8				
Estimated outlays	5	2	1		

The costs of this bill would fall within budget function 400.

Basis of estimate: CBO assumes that the funds authorized will be appropriated prior to the beginning of fiscal year 1990. The estimate of outlays is based on historical spending rates.

6. Estimated cost to State and local governments: None.
7. Estimate comparison: None.
8. Previous CBO estimate: None.
9. Estimate prepared by: Mitchell Rosenfeld.
10. Estimate approved by: C.G. Nuckols for James L. Blum, Assistant Director for Budget Analysis.

XII. Changes in Existing Law Made by the Bill, as Reported

In compliance with clause 3 of rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italic, existing law in which no change is proposed is shown in roman):

Section 506 of the Airport and Airway Improvement Act of 1982

SEC. 506. AIRWAY IMPROVEMENT PROGRAM.

(a) * * *

(b) Research, Engineering and Development, and Demonstrations.—

(1) Demonstration projects.—The Secretary is authorized to carry out under [section 312] *sections 312 and 316* of the

Federal Aviation Act of 1958 (49 U.S.C. App. 1353) such demonstration projects as the Secretary determines necessary in connection with research and development activities under such [section] *sections.*

(2) GENERAL AUTHORIZATION.—For research, engineering and development, and demonstration projects and activities under [section 312] *sections 312 and 316* of the Federal Aviation Act of 1958 and paragraph (1) of this subsection, there is authorized to be appropriated from the Trust Fund—

(A) * * *

* * * * * * *

(C) for fiscal year 1990—

(i) $25,000,000 solely for human factors research projects and activities; [and

[(ii) $221,530,000 for all other research projects and activities,]

(ii) $16,000,000 solely for research on, and evaluation of, aviation and airport security projects and activities; and

(iii) $213,530,000 for all other research projects and activities;

* * * * * * *

XIII. RECITAL OF RECORD VOTE ON REPORTING—COMMITTEE RECOMMENDATION

A quorum being present, the Committee ordered the bill favorably reported with an amendment, by unanimous voice vote.

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